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(21)Application number : **05-302587**(71)Applicant : **SEKISUI CHEM CO LTD**(22)Date of filing : **02.12.1993**(72)Inventor : **OKINAGA NOBUYUKI**

(54) WATER-BASED PRESSURE-SENSITIVE ADHESIVE COMPOSITION**(57)Abstract:**

PURPOSE: To obtain a water-based pressure-sensitive adhesive composition which can give a processed pressure-sensitive product which does not chip even when the release paper is one based on paper not laminated with a film, shows excellent releasability and has good adhesiveness and good holding power.

CONSTITUTION: This composition comprises a (meth)acrylic ester copolymer emulsion obtained by copolymerizing an alkyl (meth)acrylate (a) with a 4-14 C alkyl with an α , β -unsaturated carboxylic acid (b), a polyfunctional monomer (c) having at least two polymerizable double bonds in the molecule and at least one comonomer (d) selected from the group consisting of N-vinylpyrrolidone, acryloylmorpholine, N-isopropylacrylamide and N-vinylcaprolactam, wherein component (b) is used in an amount of 0.05-0.5wt.% based on the total monomer, and component (d) is used in an amount of 1-10wt.% based on the total monomer.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention relates to the drainage-system pressure-sensitive adhesives constituent used suitable for an adhesion manipulation product like for example, a pressure sensitive adhesive label and a seal.

[0002]

[Description of the Prior Art] Conventionally, as pressure-sensitive adhesives for adhesion manipulation products like a pressure sensitive adhesive label and a seal, the rubber system pressure-sensitive adhesives which make natural rubber, synthetic rubber, etc. a principal component, the acrylic pressure-sensitive adhesives which make an acrylic copolymer a base polymer are used.

[0003] the latter acrylic pressure-sensitive adhesives choose the component monomer of an acrylic copolymer -- a pressure-sensitive adhesion property -- width -- it has the advantage which can be adjusted widely and used abundantly for example, as acrylic pressure-sensitive adhesives which give the adhesive property excellent in an adhesion manipulation product like a pressure sensitive adhesive label and a seal, and good decision workability (Meta) the acrylic-acid alkyl ester system copolymer emulsion which makes a principal component acrylic-acid alkyl ester, an acrylic acid, and vinyl acetate (meta) is proposed -- **** (JP,5-1314,B) -- Although the detachability and decision workability from a releasing paper which use the film lamination paper like polyethylene lamination paper as the base are good in the case of these pressure-sensitive adhesives For example, since adhesion is too strong to the releasing paper which uses as the base paper which does not laminate a film like the Glassine paper and clay court paper, a detachability is bad. It judges in the configuration of a request of an adhesion manipulation product like a pressure sensitive adhesive label and a seal, and the phenomenon (it is hereafter described as a "dregs piece") in which a garbage is torn on the way when exfoliating by winding up from a releasing paper produces a garbage, and the problem that it must be interrupted on the way generates work.

[0004]

[Problem(s) to be Solved by the Invention] this invention aims at offering the drainage-system pressure-sensitive adhesives constituent which makes a principal component the acrylic-ester system copolymer emulsion which enables a manufacture of an adhesion manipulation product like the pressure sensitive adhesive label and seal which discovers the detachability which did not raise a dregs piece but was excellent also in the case of the releasing paper which uses as the base paper which is not laminated with a film in view of the above-mentioned point, and has a good adhesive property and a good holding power (meta).

[0005]

[Means for Solving the Problem] The carbon number of (a) alkyl group the drainage-system pressure-sensitive adhesives constituent of this invention The acrylic-acid (meta) alkyl ester of 4-14, (b) alpha and beta-unsaturated carboxylic acid and the polyfunctional nature monomer which has two or more polymerization nature double bonds in (c) 1 molecule, (d) N-vinyl pyrrolidone, acryloyl morpholine, It is the acrylic-ester system copolymer emulsion which carries out copolymerization of one sort or two sorts or more of copolymerization nature monomers chosen out of the group which consists of a N-isopropyl acrylamide and an N-vinyl caprolactam, and is obtained (meta). It is characterized by for (b) component being in 0.05 - 0.5% of the weight of a domain among the monomer whole quantity, and (d) component being in 1 - 10% of the weight of a domain, and the above-mentioned purpose is attained by that.

[0006] In this invention, the carbon number which is (a) component is mentioned for butyl (meta) acrylate, 2-ethylhexyl (meta) acrylate, lauryl (meta) acrylate, tetradecyl (meta) acrylate, etc. as acrylic-acid (meta) alkyl ester of 4-14, for example.

[0007] In this invention, an acrylic acid, a methacrylic acid, etc. are mentioned as alpha which is (b) component, and a beta-unsaturated carboxylic acid, for example.

[0008] In this invention, ethylene glycol dimethacrylate, triethylene glycol diacrylate, etc. are mentioned into 1 molecule which is (c) component, for example as a polyfunctional nature monomer which has two or more polymerization nature double bonds.

[0009] In this invention, the copolymerization nature monomer which is (d) component means one sort or two sorts or more of copolymerization nature monomers chosen out of the group which consists of N-vinyl pyrrolidone, acryloyl morpholine, an N-isopropyl acrylamide, and an N-vinyl caprolactam.

[0010] In addition, you may make a kind of ethylene nature unsaturation monomers, such as methyl (meta) acrylate, ethyl (meta) acrylate, vinyl acetate, 2-hydroxyethyl (meta) acrylate, and styrene, or two sorts or more contain as a copolymerization component in this invention in addition to the above-mentioned 4 components.

[0011] In this invention, it is required to be in the domain whose amount of the aforementioned (b) component is 0.05 - 0.5 % of the weight among the monomer whole quantity, and it is required to be in the domain whose amount of the aforementioned (d)

component is 1 - 10 % of the weight.

[0012] Since the holding power of the adhesion manipulation product with which the cohesive force of a pressure-sensitive adhesives constituent will become low, and the amount of (d) component occupied in the monomer whole quantity will be obtained if the amount of 1 - (b) component is less than 0.05 % of the weight even if it is in the domain which is 10 % of the weight becomes bad, practicality is missing. [which is occupied in the monomer whole quantity] Conversely, if the amount of (b) component exceeds 0.5 % of the weight, since the adhesive power of a pressure-sensitive adhesives constituent will become strong too much and the detachability from a releasing paper will become bad, the purpose of this invention cannot be attained.

[0013] Moreover, if the amount of (b) component occupied in the monomer whole quantity is [the amount of 0.05 - (d) component] less than 1 % of the weight even if it is in the domain which is 0.5 % of the weight, since the adhesive power of a pressure-sensitive adhesives constituent will become strong too much and the detachability from a releasing paper will become bad, the purpose of this invention cannot be attained. [which is occupied in the monomer whole quantity] Conversely, if the amount of (d) component exceeds 10 % of the weight, in an emulsion polymerization, a lot of aggregates will generate and a stable emulsion will not be obtained.

[0014] A manufacture of the acrylic-ester (meta) system copolymer emulsion which constitutes the drainage-system pressure-sensitive adhesives constituent of this invention is obtained by carrying out the emulsion polymerization of the four components of the above (a), (b), (c), and (d) by usual technique by special technique with a regulator like alkyl mercaptan, a persulfate, a polymerization initiator like an inorganic system peroxide, etc.

[0015] Moreover, the plasticizer generally used in pressure-sensitive adhesives, a tackifier, a thickener, a pigment, a color, a dispersant, a defoaming agent, antiseptics, PH regulator, etc. can be blended with the drainage-system pressure-sensitive adhesives constituent of this invention by the conventional method if needed.

[0016] When the technique of creating an adhesion manipulation product like a pressure sensitive adhesive label and a seal using the drainage-system pressure-sensitive adhesives constituent obtained by this invention is not special, it carries out a coating so that the thickness after drying a drainage-system pressure-sensitive adhesives constituent to the various base materials or releasing paper for adhesion manipulation products may be set to about 10-100 micrometers, a coating is carried out to a base material and a coating is again carried out to a releasing paper at a releasing paper, a desired adhesion manipulation product can be obtained by sticking with a base material.

[0017]

[Function] The drainage-system pressure-sensitive adhesives constituent obtained by this invention (a) The carbon number of an alkyl group Acrylic-acid (meta) alkyl ester of 4-14, (b) alpha and beta-unsaturated carboxylic acid and the polyfunctional nature monomer which has two or more polymerization nature double bonds in (c) 1 molecule, (d) N-vinyl pyrrolidone, acryloyl morpholine, It consists of the acrylic-ester system copolymer emulsion which carries out the emulsion polymerization of one sort or two sorts or more of copolymerization nature monomers chosen out of the group which consists of an N-isopropyl acrylamide and an N-vinyl caprolactam, and is obtained (meta). Since it is in the domain whose amount of (b) component in the monomer whole quantity is 0.05 - 0.5 % of the weight and it is in the domain whose amount of (d) component is 1 - 10 % of the weight The balance of adhesive power and cohesive force is good, and is excellent in a detachability from the releasing paper which uses as the base paper which is not laminated with a film like the Glassine paper and clay court paper, and a dregs piece is not generated, either.

[0018]

[Example] In order to explain this invention still in detail, an example is raised to below. In addition, the "section" in an example means the "weight section."

[0019] (Example 1)

[0020] (1) The water 40 section was taught to the reaction container equipped with the polymerization thermometer, the stirrer, and nitrogen introduction spool of an acrylic-ester system copolymer emulsion, it raised to 65 degrees C, and the nitrogen purge was performed. On the other hand, the monomer of the composition shown in the example 1 of Table 1 was mixed with the n-dodecyl-mercaptan (regulator) 0.01 section, and the mixed monomer was created. Next, in the water 30 section, the anion system emulsifier 0.6 section and the Nonion system emulsifier 0.8 section were melted, the above-mentioned mixed monomer was mixed and stirred to this, and the emulsification monomer was obtained. 1 % of the weight of this emulsification monomer and the ammonium-persulfate 0.4 section of the polymerization initiator which was soluble in the water 10 section were supplied in the above-mentioned reaction container, and the initial polymerization reaction was started. Subsequently, the emulsification monomer of the remainder 80 degrees C was dropped in the reaction container over 6 hours after the initial polymerization reaction end. After the instillation end, it riped for 3 hours, it cooled and the acrylic-ester system copolymer emulsion was obtained.

[0021] (2) according to the conventional method, the thickener, PH regulator, etc. were added to the adjustment profit ****s acrylic-ester system copolymer emulsion of a drainage-system pressure-sensitive adhesives constituent, and the drainage-system pressure-sensitive adhesives constituent was obtained to it

[0022] (3) it applied with the doctor blade and dried for 2 minutes at 110 degrees C so that the thickness after drying the creation profit ****s drainage-system pressure-sensitive adhesives constituent of a pressure sensitive adhesive label to the mold release processing side of the releasing paper which uses Glassine paper as the base might be set to 20 micrometers It is 55g of basis weights/, and m2 to the pressure-sensitive adhesives layer on this releasing paper. Paper of fine quality was stuck, himself was recuperated under the ambient atmosphere of 20 degree-C-60%RH for 12 hours, and the pressure sensitive adhesive label of A4 size (the width of 20.9mm, the length of 29.6mm) was obtained.

[0023] (4) the result which evaluated the adhesive power of an evaluation profit ****s pressure sensitive adhesive label, a holding power, and the sublation force from a releasing paper by the following technique was as being shown in Table 1 In addition, especially, evaluation was performed under the ambient atmosphere of 20 degree-C-60%RH, as long as it was unstated.

[0024] ** Adhesive power:JIS It applies to Z-0237 "an adhesive tape and a pressure sensitive adhesive sheet test method" correspondingly. The pressure sensitive adhesive label judged in the width of 25mm, and length of 150mm The width of 25mm, the length of 150mm, It stuck so that an adhesion length might become a polyethylene-resin plate with a thickness of 2mm with 100mm, and after having carried out 1 **** of the rollers of 2kg of doubling, having stuck them by pressure and leaving them for 20 minutes, it pulled using the Instron testing machine and 180 degrees angle peel strength (g/25mm) was measured by part for 300mm/in speed.

[0025] ** Holding-power:JIS According to Z-0237, the pressure sensitive adhesive label judged in the width of 25mm, and length of 100mm Width of 25mm, It sticks so that adhesion area may become a cold-rolling stainless steel plate with a length [of 100mm], and a thickness of 1.5mm with 25mmx25mm. a pressure sensitive adhesive label after carrying out 1 **** of 2kg rollers, sticking them by pressure and leaving them for 20 minutes -- the bottom -- carrying out -- 40-degree C constant temperature -- it hung perpendicularly all over a box, and the 1kg load was constructed in the soffit of a pressure sensitive adhesive label, it was left and time until it falls was measured

[0026] ** The 180 degrees angle peel strength (g/100mm) when exfoliating the pressure sensitive adhesive label judged in the sublation force:width of 100mm from a releasing paper and length of 250mm from the releasing paper used as the base in the Glassine paper was pulled using the Instron testing machine, and it measured by part for 750mm/in speed.

[0027] (Examples 2-6, examples 1-6 of a comparison)

[0028] By the monomer composition shown in Table 1 (examples 2-6) and 2 (examples 1-6 of a comparison), the polymerization of 11 kinds of acrylic-ester system copolymer emulsions was performed like the example 1. However, since a lot of aggregates occurred and the example 4 of a comparison and the example 6 of a comparison were not able to obtain a good emulsion during the polymerization, the number of the acrylic-ester system copolymer emulsions obtained after all was nine. Subsequently, the thickener, PH regulator, etc. were added like the example 1 to nine kinds of obtained acrylic-ester system copolymer emulsions, and nine kinds of drainage-system pressure-sensitive adhesives constituents were obtained. Furthermore, nine kinds of pressure sensitive adhesive labels were created like the example 1 using nine kinds of obtained drainage-system pressure-sensitive adhesives constituents.

[0029] The result which evaluated the adhesive power of nine kinds of obtained pressure sensitive adhesive labels, a holding power, and the sublation force from a releasing paper like the example 1 was as being shown in Table 1 and 2.

[0030]

[Table 1]

(配合単位：重量部)

			実 施 例					
アクリル酸エステル系エマルジョンのモノマー組成	成分	モノマー	1	2	3	4	5	6
	a	2 - E H A	9 0	6 6 . 7	8 7	6 9	6 6 . 7	6 6 . 7
		n - B A		2 5		2 0 . 7	2 5	2 5
	b	アクリル酸	0 . 2	0 . 3		0 . 3	0 . 3	0 . 3
		メタアクリル酸			0 . 5			
	c	E G D M A	0 . 1	0 . 1	0 . 1	0 . 2	0 . 1	0 . 1
	d	N - V P d	3	5				
		N - I P A A m			5	7		
		A L M P					5	
		N - V C L						5
	その他	酢酸ビニル	3 . 8					
		スチレン			4 . 5			
		2 - H E M A	2 . 9	2 . 9	2 . 9	2 . 8	2 . 9	2 . 9
接着力 (g / 2 5 m m)			9 5 0	9 2 0	9 5 0	9 0 0	9 0 0	9 2 0
保持力 (時間)			すべて、 1 2 時間以上					
剥離紙からの剥離力 (g / 1 0 0 m m)			3 2	3 0	3 5	3 2	3 0	3 0

- (注) - 1 2-EHA : 2-エチルヘキシルアクリレート
(注) - 2 n-BA : n-ブチルアクリレート
(注) - 3 EGDMA : エチレングリコールジメタアクリレート
(注) - 4 N-VPd : N-ビニルピロリドン
(注) - 5 N-IPAAm : N-イソプロピルアクリルアミド
(注) - 6 ALMP : アクリロイルモルホリン
(注) - 7 N-VCL : N-ビニルカプロラクタム
(注) - 8 2-HEMA : 2-ヒドロキシエチルメタアクリレート

[0031]
[Table 2]

(配合単位：重量部)

			比較例					
エマルジョンのモノマー組成	成分	モノマー	1	2	3	4	5	6
a		2-EHA	88.2	87.2	92.9	77.9	93.2	77.2
b		アクリル酸		1	0.3	0.3		1
c		EGDMA	0.1	0.1	0.1	0.1	0.1	0.1
d		N-VPd	5	5		15		15
その他	酢酸ビニル		3.8	3.8	3.8	3.8	3.8	3.8
	2-HEMA		2.9	2.9	2.9	2.9	2.9	2.9
接着力 (g / 25 mm)			840	850	880	*	820	*
保持力 (時間)			0.2	12時間以上	12時間以上	*	0.2	*
剥離紙からの剥離力 (g / 100 mm)			30	58	55	*	50	*

- (注) - 1 2-EHA : 2-エチルヘキシルアクリレート
 (注) - 2 EGDMA : エチレングリコールジメタアクリレート
 (注) - 3 N-VPd : N-ビニルピロリドン
 (注) - 4 2-HEMA : 2-ヒドロキシエチルメタアクリレート
 (注) - 5 * 乳化重合中に多量の凝集物が発生し、良好なエマルジョンを得られなかった。従って、性能評価は出来なかった。

[0032] The sublation force from the releasing paper of the pressure sensitive adhesive label using the drainage-system pressure-sensitive adhesives constituent of the examples 1-6 by this invention is very as small as 30-35g / 100mm, and is excellent also in adhesive power and the holding power as shown in Table 1. On the other hand, a holding power is extremely as bad as 0.2 hours, and the pressure sensitive adhesive label using the drainage-system pressure-sensitive adhesives constituent of the example 1 of a comparison and the example 5 of a comparison is impractical as shown in Table 2. Moreover, the pressure sensitive adhesive label using the drainage-system pressure-sensitive adhesives constituent of the example 2 of a comparison, the example 3 of a comparison, and the example 5 of a comparison has the sublation force as high as 50-58g / 100mm from a releasing paper, and the applicability to the releasing paper which uses as the base paper which is not laminated with a film is missing.

[0033]

[Effect of the Invention] The paper which is not laminated with a film like the Glassine paper and clay court paper since the sublation force from a releasing paper is very small and a dregs piece is not generated, either, while it has the adhesive power which was described above, and in which the drainage-system pressure-sensitive adhesives constituent of this invention was like] excellent, and a holding power can be used suitable for the adhesion manipulation product using the releasing paper used as the base.

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CLAIMS

[Claim(s)]

[Claim 1] The carbon number of an alkyl group (a) The acrylic-acid (meta) alkyl ester of 4-14, (b) alpha and beta-unsaturated carboxylic acid and the polyfunctional nature monomer which has two or more polymerization nature double bonds in (c) 1 molecule, (d) N-vinyl pyrrolidone, acryloyl morpholine, It is the acrylic-ester system copolymer emulsion which carries out copolymerization of one sort or two sorts or more of copolymerization nature monomers chosen out of the group which consists of an N-isopropyl acrylamide and an N-vinyl caprolactam, and is obtained (meta). The drainage-system pressure-sensitive adhesives constituent characterized by for (b) component being in 0.05 - 0.5% of the weight of a domain among the monomer whole quantity, and (d) component being in 1 - 10% of the weight of a domain.

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(54) 【発明の名称】 水系感圧性接着剤組成物

(57) 【要約】

【目的】 フィルムでラミネートされていない紙をベースとする剥離紙の場合でもカス切れを起こさず、優れた剥離性を発現し、且つ、良好な接着性と保持力を有する粘着ラベル・シールのような粘着加工製品の製造を可能とする(メタ)アクリル酸エステル系共重合体エマルジョンを主成分とする水系感圧性接着剤組成物を提供することを目的とする。

【構成】 (a) アルキル基の炭素数が4~14の(メタ)アクリル酸アルキルエステルと、(b) α 、 β -不飽和カルボン酸と、(c) 1分子中に2個以上の重合性二重結合を有する多官能性モノマーと、(d) N-ビニルピロリドン、アクリロイルモルホリン、N-イソプロピルアクリルアミド及びN-ビニルカプロラクタムからなる群から選ばれる1種もしくは2種以上の共重合性モノマーとを共重合して得られる(メタ)アクリル酸エステル系共重合体エマルジョンであって、モノマー全量中、(b)成分が0.05~0.5重量%の範囲にあり、且つ、(d)成分が1~10重量%の範囲にあることを特徴とする水系感圧性接着剤組成物。

(2)

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1

2

【特許請求の範囲】

【請求項1】 (a) アルキル基の炭素数が4～14の(メタ)アクリル酸アルキルエステルと、(b) α 、 β -不飽和カルボン酸と、(c) 1分子中に2個以上の重合性二重結合を有する多官能性モノマーと、(d) N-ビニルピロリドン、アクリロイルモルホリン、N-イソプロピルアクリルアミド及びN-ビニルカプロラクタムからなる群から選ばれる1種もしくは2種以上の共重合性モノマーとを共重合して得られる(メタ)アクリル酸エステル系共重合体エマルジョンであって、モノマー全量中、(b)成分が0.05～0.5重量%の範囲にあり、且つ、(d)成分が1～10重量%の範囲にあることを特徴とする水系感圧性接着剤組成物。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、例えば粘着ラベル・シールのような粘着加工製品に好適に使用される水系感圧性接着剤組成物に関する。

【0002】

【従来の技術】従来、粘着ラベル・シールのような粘着加工製品用の感圧性接着剤としては、天然ゴム、合成ゴムなどを主成分とするゴム系感圧性接着剤や、アクリル系共重合体をベースポリマーとするアクリル系感圧性接着剤などが使用されている。

【0003】後者のアクリル系感圧性接着剤は、アクリル系共重合体の成分モノマーを選択することによって感圧接着特性を巾広く調整できる利点を有しており多用されている。例えば、粘着ラベル・シールのような粘着加工製品に優れた接着性と良好な裁断加工性を付与するアクリル系感圧性接着剤として、(メタ)アクリル酸アルキルエステルとアクリル酸及び酢酸ビニルとを主成分とする(メタ)アクリル酸アルキルエステル系共重合体エマルジョンが提案されている(特公平5-1314号公報)が、この感圧性接着剤の場合、ポリエチレンラミネート紙のようなフィルムラミネート紙をベースとする剥離紙からの剥離性と裁断加工性は良好であるが、例えば、グラシン紙、クレーコート紙のようなフィルムをラミネートしていない紙をベースとする剥離紙に対しては密着性が強すぎるため剥離性が悪く、粘着ラベル・シールのような粘着加工製品を所望の形状に裁断し、不要部分を剥離紙から巻き上げにより剥離する時、不要部分が途中で破れる現象(以下、「カス切れ」と記す)が生じ、作業を途中で中断しなければならないという問題が発生する。

【0004】

【発明が解決しようとする課題】本発明は、上記の点に鑑み、フィルムでラミネートされてない紙をベースとする剥離紙の場合でもカス切れを起こさず、優れた剥離性を発現し、且つ、良好な接着性と保持力を有する粘着ラベル・シールのような粘着加工製品の製造を可能とする

(メタ)アクリル酸エステル系共重合体エマルジョンを主成分とする水系感圧性接着剤組成物を提供することを目的とする。

【0005】

【課題を解決するための手段】本発明の水系感圧性接着剤組成物は、(a) アルキル基の炭素数が4～14の(メタ)アクリル酸アルキルエステルと、(b) α 、 β -不飽和カルボン酸と、(c) 1分子中に2個以上の重合性二重結合を有する多官能性モノマーと、(d) N-ビニルピロリドン、アクリロイルモルホリン、N-イソプロピルアクリルアミド及びN-ビニルカプロラクタムからなる群から選ばれる1種もしくは2種以上の共重合性モノマーを共重合して得られる(メタ)アクリル酸エステル系共重合体エマルジョンであって、モノマー全量中、(b)成分が0.05～0.5重量%の範囲にあり、且つ、(d)成分が1～10重量%の範囲にあることを特徴とし、そのことにより上記目的が達成される。

【0006】本発明において、(a)成分である炭素数が4～14の(メタ)アクリル酸アルキルエステルとしては、例えば、ブチル(メタ)アクリレート、2-エチルヘキシル(メタ)アクリレート、ラウリル(メタ)アクリレート、テトラデシル(メタ)アクリレートなどが挙げられる。

【0007】本発明において、(b)成分である α 、 β -不飽和カルボン酸としては、例えば、アクリル酸、メタアクリル酸などが挙げられる。

【0008】本発明において、(c)成分である1分子中に2個以上の重合性二重結合を有する多官能性モノマーとしては、例えば、エチレングリコールジメタクリレート、トリエチレングリコールジアクリレートなどが挙げられる。

【0009】本発明において、(d)成分である共重合性モノマーとは、N-ビニルピロリドン、アクリロイルモルホリン、N-イソプロピルアクリルアミド及びN-ビニルカプロラクタムからなる群から選ばれる1種もしくは2種以上の共重合性モノマーを言う。

【0010】尚、本発明においては、上記4成分以外に、メチル(メタ)アクリレート、エチル(メタ)アクリレート、酢酸ビニル、2-ヒドロキシエチル(メタ)アクリレート、スチレン等のエチレン性不飽和モノマーの一種もしくは2種以上を共重合成分として含有させてもよい。

【0011】本発明においては、モノマー全量中、前記(b)成分の量が0.05～0.5重量%の範囲にあることが必要であり、且つ、前記(d)成分の量が1～10重量%の範囲にあることが必要である。

【0012】モノマー全量中に占める(d)成分の量が1～10重量%の範囲にあっても、モノマー全量中に占める(b)成分の量が0.05重量%未満であると、感圧性接着剤組成物の凝集力が低くなり、得られる粘着加

[0018]

【0025】②保持力：JIS Z-0237に準じ、巾25mm、長さ100mmに裁断した粘着ラベルを巾25mm、長さ100mm、厚み1.5mmの冷間圧延ステンレス鋼板に接着面積が25mm×25mmとなるように貼り合わせ、2kgのローラーを1往復させて圧

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若し20分放置した後、粘着ラベルを下側にして40℃の恒温ボックス中に垂直に懸垂し、粘着ラベルの下端に1kgの荷重を懸けて放置し、落下する迄の時間を測定した。

【0026】③剥離紙からの剥離力：巾100mm、長さ250mmに裁断した粘着ラベルをグラシン紙をベースとする剥離紙から剥離する時の180度角剥離強度（g/100mm）をインストロン試験機を用いて引張り速度750mm/分で測定した。

【0027】（実施例2～6、比較例1～6）

【0028】表1（実施例2～6）及び表2（比較例1～6）に示されるモノマー組成で、実施例1と同様にし11種類のアクリル酸エステル系共重合体エマルジョンの重合を行った。但し、比較例4及び比較例6は重合*

中に多量の凝集物が発生し良好なエマルジョンを得られなかった。結局得られたアクリル酸エステル系共重合体エマルジョンは9種類であった。次いで、得られた9種類のアクリル酸エステル系共重合体エマルジョンに実施例1と同様にして増粘剤、PH調整剤等を添加して9種類の水系感圧性接着剤組成物を得た。更に、得られた9種類の水系感圧性接着剤組成物を用いて、実施例1と同様にして9種類の粘着ラベルを作成した。

【0029】得られた9種類の粘着ラベルの接着力、保持力及び剥離紙からの剥離力を実施例1と同様にして評価した結果は表1及び表2に示すとおりであった。

【0030】

【表1】

（配合単位：質量部）

		実 施 例						
アクリル酸エステル系エマルジョンのモノマー組成	成分	モノマー	1	2	3	4	5	6
	a	2-EHA	90	66.7	87	69	66.7	66.7
		n-BA		25		20.7	25	25
	b	アクリル酸	0.2	0.3		0.3	0.3	0.3
		メタクリル酸			0.5			
	c	EGDMA	0.1	0.1	0.1	0.2	0.1	0.1
	d	N-VPd	3	5				
		N-IPAAa			5	7		
		ALMP					5	
		N-VCL						5
その他	酢酸ビニル	3.8						
	スチレン			4.5				
	2-HEMA	2.9	2.9	2.9	2.8	2.9	2.9	
接着力 (g / 25 mm)			950	920	850	900	900	920
保持力 (時間)			すべて、12時間以上					
剥離紙からの剥離力 (g / 100 mm)			32	30	35	32	30	30

（注）-1 2-EHA：2-エチルヘキシルアクリレート

（注）-2 n-BA：n-ブチルアクリレート

（注）-3 EGDMA：エチレンジグリコールジメタアクリレート

（注）-4 N-VPd：N-ビニルピロリドン

（注）-5 N-IPAAa：N-イソプロピルアクリルアミド

（注）-6 ALMP：アクリロイルモルホリン

（注）-7 N-VCL：N-ビニルカプロラクトム

（注）-8 2-HEMA：2-ヒドロキシエチルメタアクリレート

【0031】

【表2】

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(配合単位：質量部)

			比較例					
エマルジョンのモノマー組成	成分	モノマー	1	2	3	4	5	6
	a	2-EHA	88.2	87.2	82.9	77.9	63.2	77.2
	b	アクリル酸		1	0.3	0.3		1
	c	EGDMA	0.1	0.1	0.1	0.1	0.1	0.1
	d	N-VPd	5	5		15		15
その他		酢酸ビニル	3.8	3.8	3.8	3.8	3.8	3.8
		2-HEMA	2.9	2.9	2.9	2.9	2.9	2.9
接着力 (g/25mm)			840	850	880	*	820	*
保持力 (時間)			0.2	12時間以上	12時間以上	*	0.2	*
剥離紙からの剥離力 (g/100mm)			30	58	55	*	50	*

(注) - 1 2-EHA: 2-エチルヘキシルアクリレート

(注) - 2 EGDMA: エチレングリコールジメタアクリレート

(注) - 3 N-VPd: N-ビニルピロリドン

(注) - 4 2-HEMA: 2-ヒドロキシエチルメタアクリレート

(注) - 5 *乳化重合中に多量の凝集物が発生し、良好なエマルジョンを得られなかった。従って、性能評価は出来なかった。

【0032】表1に示された通り、本発明による実施例1～6の水系感圧性接着剤組成物を用いた粘着ラベルの剥離紙からの剥離力は30～35g/100mmと極めて小さく、接着力及び保持力も優れている。これに対し、表2に示された通り、比較例1及び比較例5の水系感圧性接着剤組成物を用いた粘着ラベルは保持力が0.2時間と極端に悪く実用性は無い。又、比較例2、比較例3及び比較例5の水系感圧性接着剤組成物を用いた粘

30 mmと高く、フィルムでラミネートされてない紙をベースとする剥離紙への適用性に欠ける。

【0033】

【発明の効果】以上述べたように、本発明の水系感圧性接着剤組成物は、優れた接着力と保持力を有すると共に、剥離紙からの剥離力が極めて小さくカス切れも発生しないので、グラシン紙、クレーコート紙のようなフィルムでラミネートされてない紙をベースとする剥離紙を用いる粘着加工製品に好適に使用出来るものである。